

Taxonomic notes on South African marine mollusca, I

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The work of the late Dr K. H. Barnard has provided a firm basis for research into the taxonomy of South Africa marine molluscs. There remains, however, a vast number of species whose status, relationships and nomenclature are in urgent need of revision. The present paper is the first in a series dealing with some of these problematic species.

Fam. Turridae

Drillia (Cerodrillia) burnupi (Sowerby) (Fig. 1)

Pleurotoma burnupi Sowerby, 1897: 3, pl. 8, figs. 1—2.

Drillia burnupi; Turton, 1932: 22.

Radula prototypic (formula 1-1-R-1-1); rhachidian small, with a single weak cusp; lateral plates strongly curved, with 13 sharp cusps, inner ones strong and claw-like, becoming weaker laterally and obsolete on outer side of plate; marginals long, slender and pointed; 32 rows. Resembles the radula of *Drillia (Cerodrillia) thea* Dall (Powell, 1966: 74, fig. D90).

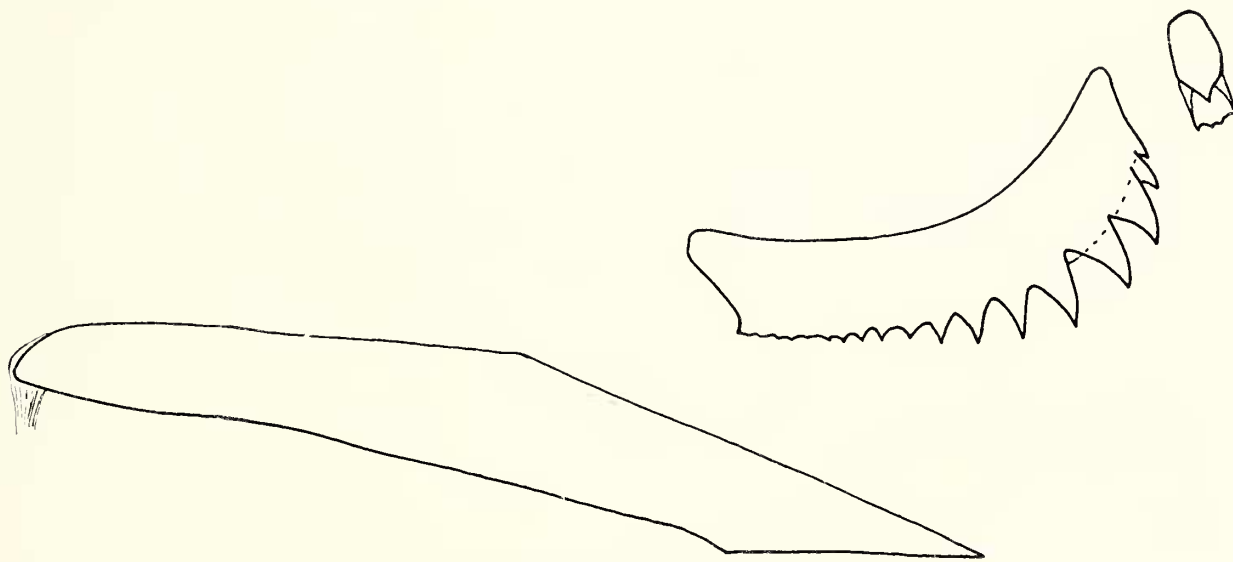


Fig. 1. *Drillia burnupi* (Sow.): radula.

Operculum leaf-shaped, rather thick, nucleus apical.

Protoconch corroded in all specimens examined, apparently two smooth whorls, 0.8×0.73 mm. in dimensions.

Distribution: Durban (type locality) and Umhlali (Nat. Mus.); Bazaruto Island, Mozambique (Nat. Mus., leg. Mrs K. Eastwood); Embotyi, Pondoland (E.L. Mus., leg. R.K., living). Also Port Alfred (Turton; requires confirmation).

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This species was synonymized with "*Drillia*" *hottentota* (Smith) by Barnard (1958:120), but the radula of the latter (see below) is very different. Conchologically, *D. burnupi* differs in being narrower, with the axial ribs reaching the suture but becoming abruptly obsolete below the periphery on the body whorl. Furthermore, the periphery of each whorl is situated towards its base, instead of in the middle as in *hottentota*, and the labral sinus is deeper and narrower.

Both *Drillia burnupi* and *D. falsa* Barnard (1958:94) appear to be referable to the subgenus *Cerodrillia* Bartsch & Rehder, 1939, which was accorded full generic rank by Powell (1966:73).

***Crassispira hottentota* (E. A. Smith) comb. nov. (Figs. 4, 5)**

Pleurotoma (Clavus) hottentota E. A. Smith, 1882:208.

Clavatula hottentota; Barnard, 1958:101.

Drillia hottentota; Barnard, 1958:120 (synonymy)

Radula formula 1-0-0-0-1. Marginal teeth long and sharply pointed, each with a well-developed basal limb; no rhachidian, but basement membrane with a series of delicate, deltoid-shaped thickenings, arranged in pairs, one on either side of the midline, and simulating degenerate lateral plates. They are here regarded as homologous to the basal plate reported by Powell (1966:55) as supporting the rhachidian in *Clionella*. These thickenings were in fact mistaken by Barnard (1958:101) for a central tooth (rhachidian), but are shown by suitable staining to be two rows of discrete structures, without cusps or cutting edges, and so diaphanous as to be probably functionless.

Operculum leaf-shaped, with apical nucleus; inner surface with thickened margin on columella side.

Penis long, slender and blunt, sperm duct slightly coiled, ending in a small swollen bulb, whose opening projects slightly as a terminal papilla.

The present species is here referred to *Crassispira* Swainson, 1840, on the grounds of a resemblance in both shell form, and structure of the marginal radula teeth (*vide* Powell, op. cit.: figs. C70—74, D100, 103). Although *C. hottentota* appears to be atypical in the absence of a subsutural cord, and in the presence of the basal plates described above, these characters are scarcely of generic status.

I am indebted to Mrs. C. M. Connolly for making available dried material of this species.

Fam. Nassariidae

***Bullia ancillaeformis* E. A. Smith (Fig. 2)**

Bullia ancillaeformis Smith, 1906:37, pl. 7, fig. 8.

? *Ancilla bulloides* (*sic.*, *non bullioides* Reeve); Turton, 1932:32.

Although this species is by no means rare in dead but fresh condition on the Natal south coast, it has never been reported since its original description, and Barnard (1959:61, 123) suggested that it was really an *Ancilla*. The absence of a basal groove shows that view to be incorrect, and the species appears to be a typical *Bullia*. A detailed description and figure is here given.

Spire 1 to $1\frac{1}{4}$ x length of aperture; sides of spire almost straight, each whorl being only slightly convex; aperture subtriangular in outline, with greatest width at base. Surface smooth, except for faint growth lines and very obscure traces of 3—4 spiral sulci on base (Smith: "obsolete spirally striata"). Parietal callus a thin glaze, covering rostrum and most of basal part of adapertural surface of body whorl, and extending up around spire, where it covers

the basal half (sometimes $\frac{5}{8}$) of each whorl; this callus first appears at end of second whorl. Colour milk-white, sometimes with a pale orange-brown band below suture, callus opaque white. Total number of whorls 6; limits of protoconch not defined, obtusely domed, diameter 1.1—1.5 mm. Adult size 19 × 7.5 mm. (Smith); 20 × 9.6 mm. (apex broken).

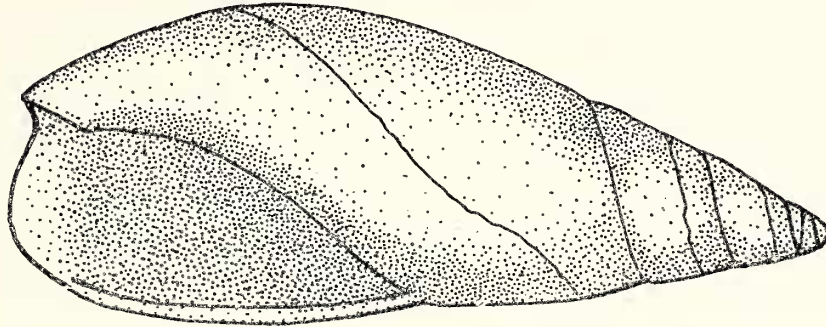


Fig. 2. *Bullia ancillaeformis* (E. A. Smith).

Type locality Port Shepstone (also Nat. Mus.); Mzamba, Pondoland (E.L. Mus.); Jeffreys Bay (in coll. Mrs C. M. Connolly).

It is probable that Turton's record of the deep-water *Ancilla bullioides* Reeve from Port Alfred is based on *Bullia ancillaeformis*. There is, as pointed out by Barnard, a superficial resemblance between the two.

Fam. Fasciolariidae

***Latirus filmerae* (Sowerby) comb. nov.**

Euthria filmerae Sowerby, 1900: 1, pl. 1, fig. 3; Barnard, 1959: 172.

Although the radula of this species is unfortunately still unknown, the shell has few features in common with members of the buccinid genus *Euthria*. The general form is that of a *Latirus* (probably subgenus *Latirulus* Cossman, 1889), and confirmation is provided by the presence of three small, but distinct transverse folds on the base of the columella. These are only visible when the aperture is viewed from an angle, and were apparently overlooked by Sowerby and Barnard.

Dead specimens have been examined from numerous localities between Bulugha (about 12 miles north-east of East London) and Palm Beach (Natal south coast).

Fam. Buccinidae

***Cantharus subcostatus* (Krauss) comb. nov. (Fig. 7)**

Buccinum rubiginosum var. *subcostata* Krauss, 1848: 120.

Pollia subcostata Tomlin, 1948: 355 (synonymy)

Cantharus carinifera (Küster); Barnard, 1959: 150; Barnard, 1969: 629.

The radula of this species is very similar to that of *C. undosus* (Linn.) and *C. fumosus* (Dillwyn), as figured by Robertson (1957: figs. 16, 17).

Common in Natal under rocks in sheltered low-tide pools. Occurs living on the Pondoland/Transkei coast at Umzikaba (Barnard, 1959), and Embotyi, Umgazi and Xora River mouth (E.L. Mus., leg. R.K.).

Fam. Columbelloidea

Pyrene (Mitrella) natalensis (Tomlin) **comb. nov.** (Fig. 8)*Mitrella natalensis* Tomlin, 1926: 291, pl. 16, fig. 5.*Columbella natalensis*; Turton, 1932: 71, pl. 17, fig. 512.

Although this species was treated as a synonym of *P. albuginosa* (Reeve) by Barnard (1959: 173), the material on hand serves to confirm its validity. In both species the rhachidian is almost square, very delicate and diaphanous, but the lateral teeth differ markedly in shape, those of *P. natalensis* being proportionately much broader, with two small but distinct denticles between the proximal cusp and the distal ones. The protoconch, consisting of two wine-red coloured whorls, is much smaller than in *P. albuginosa*, and measures only 0.32×0.3 mm., as opposed to 0.75×0.5 mm. The colour pattern (Tomlin, loc. cit.) on the six teleoconch whorls is relatively constant, and has not been observed in *P. albuginosa*. A further distinguishing feature is the total absence of a callus deposit on the columella of *P. natalensis*, even in fully grown specimens. Finally, it is a much smaller species, e.g. 7×2.3 mm. (Tomlin), 6.6×2.6 mm. (paratype, Nat. Mus.).

Distribution: Port Shepstone, Scottburgh, Durban (Tomlin, Nat. Mus.); Ballito Bay (Umhlali area, north coast of Natal) and Port Alfred (Nat. Mus., E.L. Mus., leg. R.K.). Five paratypes from Port Shepstone are in the Nat. Mus. collection (No. 3734; T488).

P. natalensis lives chiefly among coralline seaweeds, generally associated with *Pyrene kraussi* (Sow.), *P. burnupi* (Smith) and *Tricolia capensis* (Dunker); also occurs occasionally on the undersides of submerged rocks along the infratidal fringe.

Pyrene floccata (Reeve) (Figs. 3, 9)*Columbella floccata* Reeve, 1859: sp. 160; Sowerby, 1892: 22; Turton, 1932: 72; Barnard, 1959: 174.

This species, which does not appear to have ever been adequately described, is very distinct from *P. albuginosa*.

Protoconch somewhat mamillate, $1\frac{1}{2}$ whorls, 0.71×0.74 mm., smooth. Teleoconch whorls 6, smooth except for growth lines and 8—9 weak spiral lirae on base and rostrum. Columella callus ending in a distinct terminal pleat, rostrum occasionally bearing a few feeble granules; outer margin of callus free basally. Outer lip smooth or plicate within (see below). Dimensions: 16.9×7 mm.; 9.2×4.3 mm.

Operculum pyriform in outline, nucleus apical.

Radula: Rhachidian plate delicate, semilunate in shape; lateral plate with a well-developed basal limb and a flange-shaped proximal cusp, apex bifalcate; about 150—160 rows. In struc-

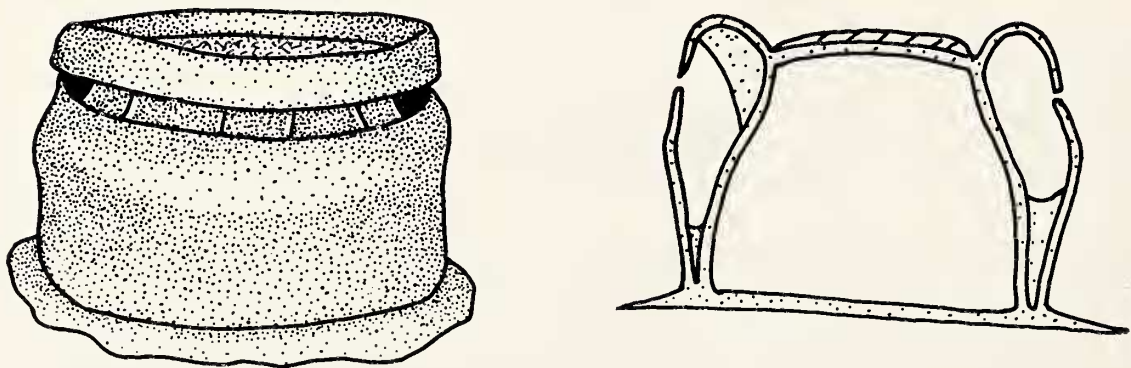
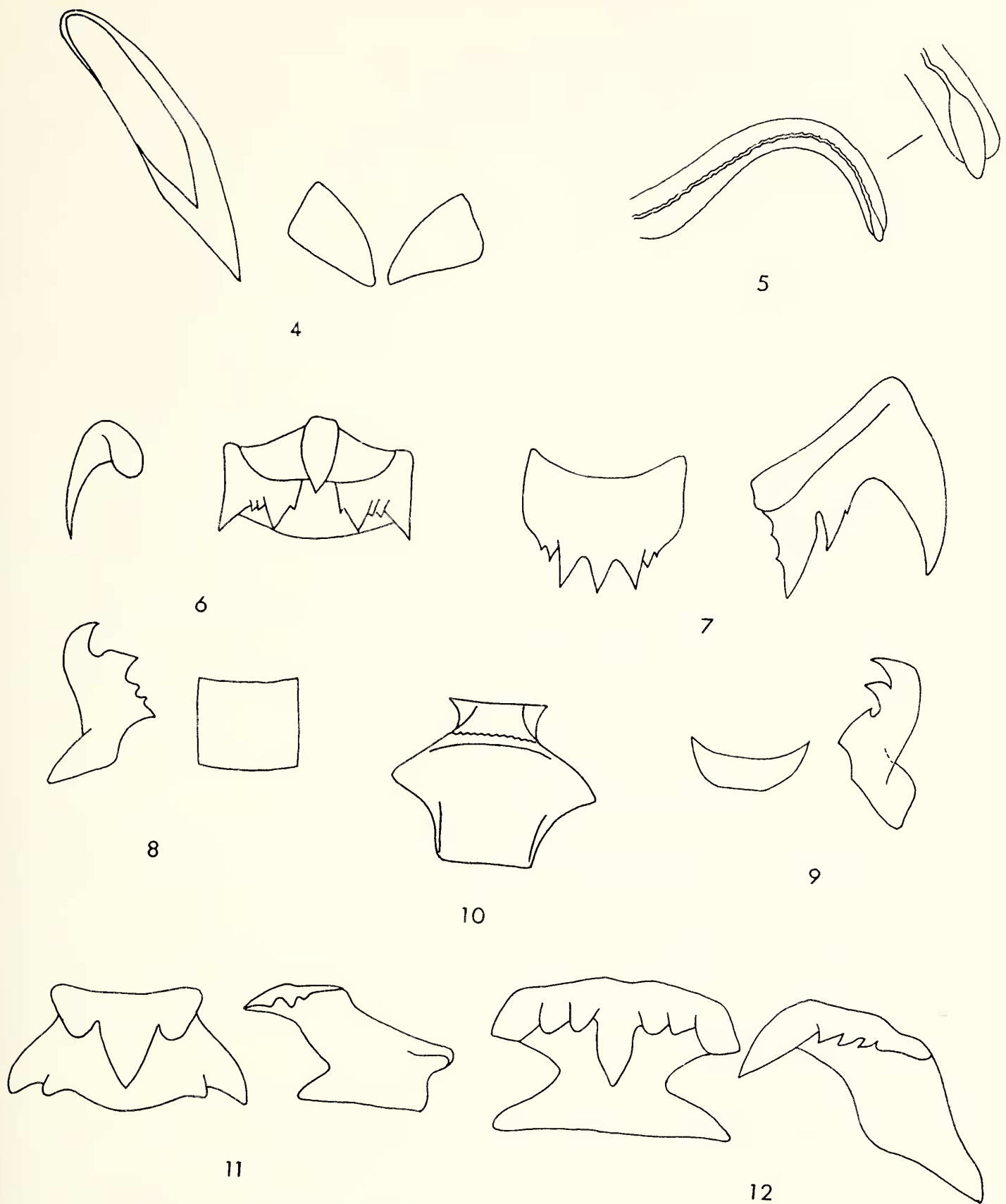


Fig. 3. Egg capsules of *Pyrene floccata* (Reeve), diagrammatic t/s on right.



Figs. 4-12.

- Fig. 4. *Crassispira hottentota* (E. A. Smith): radula.
 5. *C. hottentota*: penis, sperm duct shown by transparency.
 6. *Pteropurpura incurvispina*, nom. nov.: radula.
 7. *Cantharus subcostatus* (Krauss): radula.
 8. *Pyrene natalensis* (Tomlin): radula.
 9. *Pyrene floccata* (Reeve): radula.
 10. *Cinysca granulosa* (Krauss): rhachidian plate.
 11. *Natica forata* Reeve: rhachidian and lateral plates.
 12. *Cymatium durbanense* (E. A. Smith): rhachidian and lateral plates.

ture the lateral plates closely resemble those of *Nitidella nitida* (Lamarck) (*vide* Troschel, 1869, pl. 9, fig. 4). The present species will probably prove to be congeneric, but is best retained in *Pyrene* (s.l.) until the classification of the Columbelloidea has been finalized.

Egg-capsules: Numerous individuals were found spawning at Embotyi (Pondoland) towards the beginning of August 1968. The spawn was deposited in communal sheets, sometimes consisting of several hundred capsules, on the undersides of rocks. The capsules are almost colourless and shaped like short cylinders, the average size being 1.3×2.5 mm.; each is joined to its neighbours by a thin basal expansion. In structure each capsule consists of an inner oothecum, surrounded by a protective outer wall; the dorsal surface of the oothecum bears a thin spongy layer, and its periphery forms an eave-like collar, which barely touches the edge of the outer wall, and which bears several thin buttresses on its inner surface. Some of the older capsules contained 1—3 well-developed veliconchas. In structure these capsules are basically similar to those figured by Amio (1955:235, fig. 3) as "*Columbella* (? *versicolor* Sow.)", but have a more extensive outer wall and collar, and the dorsal surface is spongy instead of setose.

Range: Port Alfred to Durban; type locality East London. Sowerby's 1892 record from Port Elizabeth needs confirmation.

P. floccata shows a certain amount of geographic variation. In shells from the eastern Cape and Transkei regions the outer lip is smooth inside. From the Coffee Bay area northwards, however, there is a tendency towards the development of 8—10 labral plicae. Although the typical colour pattern (as described by Barnard, 1959:174) occurs throughout the range, correlated with the development of the denticulate form is the occasional appearance of pink, orange or crimson individuals, while others are strikingly marked with chestnut-brown. A pinkish-orange peripheral band does occasionally occur in East London shells, but appears to be a product of beach-wear. However, as there is no clear geographic separation of the two forms, it does not appear advisable to grant subspecific status to the eastern population.

Fam. Muricidae

***Pteropurpura* (*Poropteron*) *incurvispina* nom. nov. (Fig. 6)**

Murex mitraeformis (non Brocchi, 1814) Sowerby, 1841: fig. 75; Barnard, 1959: 200, fig. 42b. *Pteropurpura* (*Poropteron*) *mitraeformis*; Vokes, 1964: 27; Barnard, 1969: 638, fig. 19f (incorrectly listed under *P. uncinarius* (Lam)).

Radula: Rhachidian with prominent median cusp and two major and 2—3 minor cusps on each side; lateral plate slender, falcate; at least 214 rows of teeth. Somewhat similar to that of *Ocinebra erinaceus* (Linn.) (*vide* Troschel, 1869, pl. 11, figs. 11—12). The figure given by Barnard (1969) for *P. incurvispina* evidently shows a very worn rhachidian tooth, as the whole median cusp is omitted.

Operculum: Ovate, with nucleus near anterior end of outer margin, growth lines distinct, sometimes rather lamellose.

Vokes (1964) transferred this species and the allied *uncinarius* Lam. (type species of *Poropteron* Jousseume, 1880) to the genus *Pteropurpura* Jousseume, 1880, on conchological grounds. The presence of an ocinebrid radula and operculum provides support for this action. Vokes, however, and apparently Cernohorsky (1967: 127), have incorrectly synonymized *P. incurvispina* with *P. uncinarius*. Some of the characters separating the two have been pointed out by Barnard (1959), but in addition to these, *P. incurvispina* differs in the alignment of the main spines, which are strongly recurved from their bases, while in *P. uncinarius* they stand out almost at right angles to the main axis, with only the distal half recurved. Furthermore, in the latter species the minor spines, of which there are four on the body whorl,

are short, erect and more or less foliated, but in *P. incurvispina* they are simple, distinctly incurved towards the aperture and number five or six.

P. incurvispina is fairly common in the East London—Umhlali area, living on the undersides of rocks in lower balanoid zone pools. No specimens have been seen from west of Port Alfred, although Barnard records it from Still Bay. *P. uncinarius*, on the other hand, seems to live entirely infratidally, and has not been examined by the author from east of Port Alfred.

Fam. Cymatiidae

Cymatium (Monoplex) parthenopeum (von Salis)

Cymatium parthenopeum; Clench & Turner, 1957: 228, pl. 110, fig. 4, pl. 112, figs. 7—8, pl. 113, figs. 9—10, pl. 128, figs. 1—3 (synonymy).

Cymatium olearium (non *Murex olearium* Linn.); Barnard, 1963a: 26, fig. 3f.

After comparing specimens from widely separated localities, Clench & Turner concluded that a single almost cosmopolitan species was involved. Comparison of South African shells with examples from Brazil, the West Indies, Japan, Australia and New Zealand certainly seems to confirm this view. It should, however, be noted that radulae of examples from Durban and Embotyi agree more closely with Powell's figure (1933: 169, fig. 7) of a New Zealand specimen, than with those of examples from Japan and Brazil (Clench & Turner, pl. 113, figs. 9 and 10).

C. parthenopeum is common in Natal, and fresh shells are not infrequently found as far as Jeffreys Bay. In addition, the East London Museum has a specimen taken alive at Plettenberg Bay (Mrs H. Boswell). The species lives chiefly in sheltered, sometimes muddy, crevices around the low-tide mark, and may also be found almost completely buried in sand among rocks.

Cymatium (Cabestana) durbanense (E. A. Smith) (Fig. 12)

Lotorium durbanense E. A. Smith, 1899: 248, pl. 5, fig. 4.

Cymatium durbanense; Barnard, 1963a: 27, fig. 3e.

Barnard's suggestion that this might prove to be a dwarf form of *C. parthenopeum* cannot be maintained. Apart from differences in size and in dentition (see below), the following characters serve to distinguish the two species.

	<i>C. parthenopeum</i>	<i>C. durbanense</i>
<i>Nucleus of operculum:</i>	Apical.	Lateral.
<i>Columella callus:</i>	Strongly plicate, with chocolate-brown interstices.	Feebly plicate, uniform white.
<i>Spiral cords:</i>	Without regular transverse notches	With shallow, but regular transverse notches.
<i>Colour of animal:</i>	Greenish-yellow, head and sides of foot covered with black spots, each of which is ringed with bright yellow.	Yellowish, head and sides of foot profusely spotted with liver-brown.

Radula: Rhachidian approximately $\frac{3}{5}$ as long as wide, median cusp well developed, laterals and marginals typical for genus; about 50 rows of teeth.

Range: Fresh dead shells have been examined from many localities between Jeffreys Bay (E. L. Mus., Nat. Mus.) and Santa Carolina Island, Mozambique (E. L. Mus., *leg.* Mrs T. Trow). Living specimens have been collected by the author at Durban and Chaka's Rock, Umhlali district, on the undersides of rocks covered with a surface layer of muddy silt, along the infratidal fringe.

Cymatium (Cabestana) labiosum (Wood)

Murex labiosus Wood, 1828: 15, pl. 5, fig. 18.

Triton labiosus; Reeve, 1844, sp. 52; Sowerby, 1892: 8.

Cymatium labiosum; Turton, 1932: 110, pl. 24, no. 796; Cernohorsky, 1967: 317, pl. 143, fig. 8.

The specimen figured by Turton is very beach worn, but is quite distinctive, and is certainly not referable to *C. durbanense* as suggested by Barnard (1963a: 27). Fresh specimens of *C. labiosum* are not uncommon in Natal, although as yet only one living specimen seems to have been collected in South African waters (Durban; Nat. Mus., *leg.* Burnup). The East London Museum has shells from Embotyi (Pondoland), East London and Jeffreys Bay.

Fam. Naticidae

Natica forata Reeve (Fig. 11)

Natica forata Reeve, 1855: sp. 129; Turton, 1932: 158.

Natica queketti Sowerby, 1894: 371; 1897, pl. 6, fig. 6. **Syn. nov.**

Natica africana Bartsch, 1915: 138, pl. 13, figs. 13—15; Turton, 1932: 158. **Syn. nov.**

Natica forata adjacens Turton, 1932: 158, pl. 35, fig. 1127. **Syn. nov.**

This variable species is characterized by the presence of two thin spiral lirae entering the umbilicus, which also has a weak marginal ridge and a series of low, incremental periostracal lamellae within. The protoconch is low, of $1\frac{1}{2}$ whorls, and measures 0.79 mm. in diameter.

Operculum calcareous, surface somewhat concave, smooth, except for three slender, flattened spiral threads along the outer margin, the outermost forming the actual edge.

Radula with tricuspid rhachidian, laterals with weak cutting edges and small cusps; marginals simple (non-bifurcate).

Although typical examples of *N. forata* and *N. queketti* appear quite distinct, the numerous intermediate specimens that have been examined show these to represent the extreme forms of a single species. *N. africana* Bartsch is, in fact, based on such an intermediate. Typical *forata* has a low, very obtuse spire, and a wide umbilicus, while in *queketti* the spire is distinctly higher and the umbilicus very narrow. Both forms occur in the Jeffreys Bay—East London area, while the form *queketti* ranges north through Natal to Bazaruto Island, Mozambique; the latter was also recorded from the Persian Gulf and Karachi by Melvill & Standen (1901: 358).

N. forata is unusual among South African naticids in that it appears to live chiefly in crevices in the undersides of rocks, generally in lower balanoid zone pools, rather than on sand or mud.

Fam. Turbinidae

Genus **Cynisca** **nom. nov.**

Cynisca Adams, H. & A., 1954: 406 (*non* Gray, 1844), type-species: (original designation)

Cyclostrema granulata A. Adams, 1853 [= *Delphinula granulosa* Krauss, 1848].

Knight *et al* (1960: 270) have correctly pointed out that *Cynisca* is a junior homonym. However their suggestion that this genus might be a synonym of *Leptocollonia* Powell (1951: 105, type-species *L. thielei* Powell) cannot be supported, as its members have a liotiid

operculum, with spiral rows of small calcareous beads, while in *Leptocollonia* the operculum is calcareous and smooth, except for a deep spiral groove (i.e., it is homalopomatid).

The radula of *Cinysca granulosa* (Krauss) has been figured by Barnard (1963b: 226, fig. 8a); the rhachidian, however, is there incorrectly drawn, for staining reveals the presence of alate lateral expansions (fig. 10) such as occur in *Leptocollonia thielei* (Powell, 1951, fig. G13) and *Homalopoma carpenteri* Pilsbry (Pilsbry, 1888, pl. 60, fig. 73).

Fam. Trochidae

Monilea (Priotrochus) ponsonbyi (Sowerby)

Trochus (Gibbula?) ponsonbyi Sowerby, 1888: 209, pl. 11, fig. 5.

Priotrochus alexandri Tomlin, 1926: 295, pl. 16, fig. 8; Barnard, 1956b: 251, fig. 13. **Syn. nov.**

Sowerby's description of *Trochus ponsonbyi* was evidently overlooked by Tomlin. Although apparently extinct, this species is abundant in raised Pleistocene beaches around the mouth of the Zwartkops River in Algoa Bay, and specimens are occasionally washed up on the neighbouring shores. This was presumably the origin of both Sowerby's and Tomlin's examples.

Trochus nigropunctatus Reeve

Trochus hanleyanus (*non* Reeve); Krauss, 1848: 100.

Trochus nigropunctatus Reeve, 1861: sp. 71; Barnard, 1963b, 253, fig. 14b.

Trochus textilis Reeve, 1861: sp. 82; Smith, 1903: 388. **Syn. nov.**

Trochus flammulatus (*non* Lamarck); Braga, 1956: 32, pl. 6, fig. 6.

Reeve's figure of *T. textilis* from the "Cape of Good Hope" clearly shows a slightly worn example of *T. nigropunctatus*. The type locality of the latter was given as Natal, here restricted to Durban.

In Natal this species is abundant in sheltered mid-tidal pools, both among marine growths and under rocks. The western limit of its range appears to be Bonza Bay, about three miles north-east of East London (living, in coll. Mrs M. Rix).

Fam. Limopsidae

Philobrya limoides (E. A. Smith)

Hochstetteria limoides Smith, 1904: 42, pl. 3, fig. 25.

Philobrya smithi (nom. nov.) Barnard, 1964: 386, 388, fig. 5b (synonymy).

Smith's name must be reinstated. The existence of a junior homonym (*P. limoides* Smith, 1907) does not necessitate renaming of the *senior* homonym.

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